1978 EDITORIAL SUBJECT INDEX

Control Engineering Volume 25 . . . January – December 1978

(N) News (ED) Editorial

ACTUATORS
AC Motors Enrich Control Design Tradeoffs. Bailey, S.J. . . . . Nov. 34
Bellows Solve Difficult Problems in Control Systems. Morris, H.M. . . . . Oct. 52
Five-Phase Stepping Motor Had Better Response. Kompass, E.J. . . . . Mar. 63
Incremental Actuation '78: Stepper Torque and Force Moving Up. Bailey, S.J. . . . . May 47
New Drives Highlight Triple Engineering Show (N) . . . . . Dec. 11

ADAPTIVE CONTROL
Computers Use Error-Adaptive Control in Combined Cycle Power Plant. Uram, R. . . . . Jul. 37

AMPLIFIERS, see power controllers

ANALOG TO DIGITAL CONVERTERS
Smart Sensors: A Microcomputer and A/D Converter on a Single Chip. McGowan, M.J. . June 66

ANALYSIS INSTRUMENTS
Energy, Ecology Crises Spur On-Line Analysis. Bailey, S.J. . . . . Aug. 27
Foxboro Forms Analytical Division (N) . . . . Feb. 17
Moisture Sensing '78; Prognosis: Precision. Bailey, S.J. . . . . Feb. 56
On-Line Sensor Cleaning Keeps the Process Flowing. Yamashita, S. . . . . Mar. 66

ANNUNCIATORS, see Monitoring and annunciating

BATCHING, see Weighing and batching

COMPUTER PERIPHERALS
CDC to Manufacture Series/1 Peripherals . . . . . Feb. 22
How Accurate is High-Density Digital Recording? Schulze, G.H. . . . . Nov. 52
Micro I/O: I/O Interfaces-A Microcomputer Link to the Real World. McGowan, M.J. . . . . June 56

COMPUTER SOFTWARE
Change to High-Level Language Aids Batch-Mixing System Payback. Arrowsmith, C. . . . . Feb. 113
Computers Use Error-Adaptive Control in Combined Cycle Power Plant. Uram, R. . . . . July 37
Data General Adds MicroNOVA Interfaces, Software (N) . . . . . Jan. 24
Fisher Unveils Process Control Software Family (N) . . . . . Feb. 18
How Much Software for Microcomputer Control? Rolander, T. . . . . Jan. 54
Interactive Compiler Translate Step-by-Step and Stores Translations Benton, L.A. . . . . Aug. 32

COMPUTERS
CDC to Manufacture Series/1 Peripherals (N) . . . . . Feb. 22
Computers and Other Controllers (ED) . . . . May 45
Computers Use Error-Adaptive Control in Combined Cycle Power Plant. Uram, R. . . . . July 37
Computer Automation to Open Irish Plant (N) . . . . . Apr. 16
Computers, Computers, Everywhere (ED) . . . . . June 47
Data General Adds MicroNOVA Interfaces, Software. (N) . . . . . Jan. 24
DEC Introduces Smaller Microcomputer Modules (N) . . . . . Jan. 21
DEC to Market Ruggedized PDP-11/34 and LSI-11M (N) . . . . . Aug. 9
DEC's Mew Mainframe (N) . . . . . Apr. 13
Experiment Intended to Recover Oil from Tar Sand Uses HP 2100 . . . . . Sep. 40
Honeywell Consolidates Level 64 Computer Line (N) . . . . . Mar. 15
How Accurate is High-Density Digital Recording? Schulze, G.H. . . . . Nov. 52
IBM Adds Series/1 Power Management Programs (N) . . . . . May 18
Interactive Compiler Translates Step-by-Step and Stores Translations. Benton, L.A. . . . . Aug. 32
Minicomputer/PC Combination Enhances Control and Reporting Capabilities. Eymard, T.A. and Vlier, T.E. . . . . Apr. 122
Perspective: Fitting Computers to the Control Task. Kompass, E.J. . . . . June 50
Process Computer Use in Water and Waste to be Polled by ISA (N) . . . . . Dec. 12
60 Minis Scan 8,000 Points in High-Speed Nuclear Power DAS (N) . . . . . Nov. 11

COMPUTING CONTROL
The Automated Factory - A Dream Come True? Ruzic, N. . . . . Apr. 58
Centralized Energy Use Control System Handles Up to 60 Remote Stations (N) . . . . . June 18
Change to High-Level Language Aids Batch-Mixing System Payback. Arrowsmith, C. . . . . Feb. 113
Computer-Controlled Machine Automatically Wraps Generator Coils . . . . . May 38
Computer Control at Work: Microcomputer System Controls Steel Angle Fabrication. Horbal, M.T. and Derrico, D. . . . . June 69
Computerized Process Control Grows: Report (N) . . . . . June 20
Computers and Multiplexing System Project New Plutonium Processing Facility. Reitzel, D. Aug. 75
Control in the Paper Industry Up to the Minute. Kompass, E.J. . . . . Dec. 44
Corps Cuts Costs at Micro-Controlled Hydro Plant . . . . . Feb. 41
Distribute of No? The Choices Between Distributed and Central Computing Control. Jenkins, D.W. . . . . Jun. 61
How Much Software for Microcomputer Control? Rolander, T. . . . . Jan. 54
Interactive Graphics: A Powerful Tool Supplants Large Control Panels. Brewer, S.C. . . . . Sep. 54
LEDs to Lose to LCDs: Report (N) . . . . . Oct. 14
Man-Process Interface is a Vital Display Function. Bailey, S.J. . . . . Mar. 46
Microcomputer Control System Boosts Efficiency at Air Freight Terminal. Zilko, P.S. . . . . Nov. 111
Minicomputer/PC Combination Enhances Control and Reporting Capabilities. Eymard, T.A. and Vlier, T.E. . . . . Apr. 122
Multiple PCs Operate Under Micro or Mini Control (N) . . . . . Feb. 42
Perspective: Fitting Computers to the Control Task. Kompass, E.J. . . . . June 50
Process Computer Use in Water and Waste to be Polled by ISA (N) . . . . . Dec. 12
Process Control System is Distributed to the Valves. McGowan, M.J. . . . . Dec. 41
Soaking Pit Controller May Yield Major Energy Savings in Steel Mill. Bendle, L.I. and Soderman, R.H. . . . . Oct. 103
Three-Level Machine Control to Speed Aircraft Parts Production. . . . . June 40
World Process Control Market to Be $9.5 Billion by '86: Report (N) . . . . . Aug. 9
Writing P-I-D Control Loops Easily in BASIC. Fishbeck, J. . . . . Oct. 45

CONTROL ENGINEERS, PROFESSIONAL IMPROVEMENT
Education: Microcomputers: The Ubiquitous Control Element. Garen, E.R. . . . . June 53
Short Courses Add to Professional Skills. Klein, A. . . . . Apr. 55

CONTROL SIGNAL TRANSMISSION
Analog Input and Output Modules for CAMAC (N) . . . . . May 22
Automatically Restarting a Microprocessor After Power Failure. Beaston, J. . . . . Dec. 84
Asynchronous Transmission Has Use In Electronic, Fiber Optic Systems. Gawlowicz, D.J. . . . Feb. 67
Computers and Multiplexing System Project New Plutonium Processing Facility. Reitzel, D. . . . . Aug. 75
Digitially-Based Telecommunications Growth Forcast (N) . . . . . June 24
Eliminating Signal Leakage Through Shield Saves Using an Amplifier . . . . . Sep. 48
Fiber Optic Data Links Near for Industrial Control. Bailey, S.J. . . . . Dec. 32
Fiber Optics Provide Color for San Francisco's BART Subway . . . . . July 20
Microprocessors Improve Serial Communications. Deshon, W.E. . . . . Mar. 127
Minicomputer/PC Combination Enhances Control and Reporting Capabilities. Eymard, T.A. and Vlier, T.E. . . . . Apr. 122
Union Pacific R.R. Makes First Use of Fiber Optics in Railroad Industry (N) . . . . . Dec. 12
Use Existing In-Plant Telephone Lines for Data Transmission. Gawlowicz, D.J. . . . . May 54

CONTROL, SOFTWARE, see Computer software

CONTROLLERS, see Process controllers, also Power controllers, also Programmable controllers

CRT DISPLAYS, see Display of data

DATA ACQUISITION
Brown Boveri Acquires LFE Division (N) . . . Sep. 17
Data Acquisition Study Has New Third Volume (N) . . . . . Aug. 9
Design Alarm Systems to Favor Critical Information. Hanes, R.L. . . . . Oct. 49
Experiment Intended to Recover Oil from Tar Sand uses HP 2100 . . . . . Sep. 40
LSI Subsystems Leading to Distributed Data Acquisition Systems. Bailey, S.J. . . . . Sep. 69
60 Minis Scan 8,000 Points in High Speed Nuclear Power DAS (N) . . . . . Nov. 11

DATA HIGHWAYS, see Control signal transmission

DATA TRANSMISSION, see Control signal transmission

DIGITAL TECHNIQUES
Asynchronous Transmission Has Use In Electronic, Fiber Optic Systems. Gawlowicz, D.J. . . . Feb. 67
Process Control System is Distributed to the Valves. McGowan, M.J. . . . . Dec. 41
Use Existing In-Plant Telephone Lines for Data Transmission. Gawlowicz, D.J. . . . . May 54
Writing P-I-D Control Loops Easily in BASIC. Fishbeck, J. . . . . Oct. 45

DISPLAY OF DATA
Beckman Forms New Electro-Products Div. (N) . . . . . Sep. 20
Design Alarm Systems to Favor Critical Information. Hanes, R.L. . . . . Oct. 49
Fiber Optics Provide Color for San Francisco's BART Subway . . . . . July 20
Interactive Graphics: A Powerful Tool Supplants Large Control Panels. Brewer, S.C. . . . . Sep. 54
LEDs to Lose to LCDs: Report (N) . . . . . Oct. 14

Man-Process Interface is a Vital Display Function. Bailey, S.J. . . . . Mar. 46
Optoelectronics Market to Double by '85: Report (N) . . . . . Nov. 13

DISTRIBUTED CONTROL SYSTEMS

Distributed or No? The Choice Between Distributed and Central Computing Control. Jenkins, D.W. . . . . June 61
Distributed Control System is New From Robertshaw (N) . . . . . Jan. 22
Environmentally Rugged I/O System Provides New Capabilities for Distributed Control. Kompass, E.J. . . . . Apr. 51
Distributed Power Sources: Key to Successful Distributed Control. Bailey, S.J. . . . . July 31
Interactive Graphics: A Powerful Tool Supplants Large Control Panels. Brewer, S.C. . . . . Sep. 54
LSI Subsystems Leading to Distributed Data Acquisition Systems. Bailey, S.J. . . . . Sep. 69
Process Control System is Distributed to the Valves. McGowan, M.J. . . . . Dec. 41
Soaking Pit Controller May Yield Major Energy Savings in Steel Mill. Bendle, L.I. and Soderman, R.H. . . . . Oct. 103

ECONOMICS

'78 Outlook Good for Fluid Power Industry: NFPA Survey Results (N) . . . . . May 17

EDITORIALS

Computers and Other Controllers (ED) . . . . May 45
Computers, Computers Everywhere (ED) . . . . . June 47
Control: The Common Purpose (ED) . . . . . Feb. 47
Gains and Goals for Control (ED) . . . . . Apr. 37
On-Chip Systems Presently Lost to Control Builders (ED) . . . . . Sep. 53
Open Industry Seminars for Progress (ED) . . . . . Dec. 31
Open Loop Control is Still Control (ED) . . . . Aug. 25
Our Goal is Usefulness (ED) . . . . . Mar. 45
Power Supplies Spreading Thinner (ED) . . . July 25
The Pressure's On for Change (ED) . . . . . Nov. 33
A Promising Year for Controls (ED) . . . . . Jan. 47
The Proven and the New (ED) . . . . . Oct. 37

EDUCATION

CE Integrated Computer Systems Extend Microcomputer Training (N) . . . . . May 17
Education: Microcomputers: The Ubiquitous Control Element. Garen, E.R. . . . . June 53
Process Control Course (N) . . . . . Nov. 13
Short Courses Add to Professional Skills. Klein, A. . . . . Apr. 55
Short Courses to Appear in Various Cities. (N) . . . . . May 24

ELECTRIC GENERATION CONTROL

Computers Use Error-Adaptive Control in Combined Cycle Power Plant. Uram, R. . . . . July 37
Corps Cuts Costs at Micro-Controlled Hydro Plant . . . . . Feb. 41

ELECTRONICS, EFFECTS ON CONTROL

On-Chip Systems Presently Lost to Control Builders (ED) . . . . . Sep. 53

ENERGY CONSERVATION AND CONTROL

Centralized Energy Use Control System Handles Up to 60 Remote Stations (N) . . . . . June 18
IBM Adds Series/1 Power Management Programs (N) . . . . . May 18
Energy Costs Forcing Fluid Power Trends. Henke, R. . . . . Aug. 37
Energy, Ecology Crises Spur On-Line Analysis. Bailey, S.J. . . . . Aug. 27
Ship's Fuel Use Cut 13% by New Autonav System (N) . . . . . Oct. 12
Solar, Load Management Research Program Started (N) . . . . . June 26

FIBER OPTICS

Asynchronous Transmission Has Use In Electronic, Fiber Optic Systems. Gawlowicz, D.J. . . . . Feb. 67
Belden Forms Fiber Optics Group (N) . . . . June 16
Corning's Conventional Fiber Optics Line Sold to Welch Allyn (N) . . . . . Jul. 9
Fiber Optics Test is Successful: Bell (N) . . . June 15
Fiber Optics Provide Color for San Francisco's BART Subway . . . . . July 20
First U.S. Fiber Optics Exposition Held (N) . . . . . Oct. 12
Siemens, Corning Form New Optical Company (N) . . . . . Jan. 21
Union Pacific R.R. Makes First Use of Fiber Optics in Railroad Industry (N) . . . . . Dec. 12

FLOW

Flowmeters '77: Technical Glamor vs. Good Old Ways. Bailey, S.J. . . . . Jan. 21
Flowmeter Rotor "Hovers" in the Liquid Flow Under Measurement . . . . . Jan. 40
Linearizing DP Flow Loops in the Field . . . . Sep. 45

FLUID POWER

Energy Costs Forcing Fluid Power Trends. Henke, R. . . . . Aug. 37
'78 Outlook Good for Fluid Power Industry: NFPA Survey Results (N) . . . . . May 17

FORCE

Measuring Force Difficult in Varying Environments. Morris, H.M. . . . . Sep. 78

HIERARCHICAL CONTROL, see Computing control

HYDRAULICS

Energy Costs Forcing Fluid Power Trends. Henke, R. . . . . Aug. 37
Simplified Model Eases Hydraulic System Simulation. Kandelman, A. and Nelson, D.J. . . . Apr. 65

INDUSTRIAL CONTROL

AC Motors Enrich Control Design Tradeoffs. Bailey, S.J. . . . . Nov. 34
Computer-Controlled Machine Automatically Wraps Generator Coils. . . . . May 38
Computer Control at Work: Microcomputer System Controls Steel Angle Fabrication. Horbal, M.T. and Derrico, D. . . . . June 69
Control in the Paper Industry Up to the Minute. Kompass, E.J. . . . . Dec. 44
Digital Power Drive Controller Dynamics Are Characterized by ROMs. Doherty, D.W. and Wells, E.J. . . . . Jan 58
Distribute or No? The Choices Between Distributed and Central Computing Control. Jenkins, D.W. . . . . June 61
Distributed Power Sources: Key to Successful Distributed Control. Bailey, S.J. . . . . July 31
Environmentally Rugged I/O System Provides New Capabilities for Distributed Control. Kompass, E.J. . . . . Apr. 51
Fiber Optic Data Links Near For Industrial Control. Bailey, S.J. . . . . Dec. 32
Giddings & Lewis is New PC Market Entry (N) . . . . . Jan. 21
Learn the Jargon Before Specifying Photoelectric Switches. Morris, H.M. . . . . Nov. 47
Load-Sharing Redundancy Improves System Reliability . . . . . Apr. 27
A Look at the New Breed of PCs. Klein, A. . . . . Nov. 40
Measuring Force Difficult in Varying Environments. Morris, H.M. . . . . Sep. 78
Microcomputer Control System Boosts Efficiency at Air Freight Terminal. Zilko, P.S. . . . . Nov. 111
Microcomputer Improves Resolution in Mass-Sensitive Scale. Bailey, S.J. . . . . Nov. 45
Modular Approach Speeds DC Drive System Build-up. Baumgart, G.E. and Jones, D.W. . . . . Jan. 62
New Drives Highlight Triple Engineering Show (N) . . . . . Dec. 11
New Programmable Controller Has Dual Microprocessors. Kompass, E.J. . . . . Oct. 55
PC Controls Refrigerate Foam Filling Line . . . . . June 36
PCs Provide Sequencing Flexibility in Furnace Applications. Klein, A. . . . . Feb. 53
Process Control System is Distributed to the Valves. McGowan, M.J. . . . . Dec. 41
Put Some Statistical Muscle in Your Process Control. McElroy, L.N. . . . . May 107
Relays: The Essential Component in Industrial Control. Kompass, E.J. . . . . Feb. 49
Selecting and Applying Nuclear Belt Scales. McIntyre, C.E. . . . . July 26
Special CPU Design Makes Programming Logic More Efficient. Bullock, T.B. . . . . May 52
Tyco Sells Interest in Cutler-Hammer to Eaton (N) . . . . . July 9
When to Specify Sensitive-Response Low-Power Relays. Jones, C. . . . . Sep. 157

INTERFACING WITH COMPUTERS

Environmentally Rugged I/O System Provides New Capabilities for Distributed Control. Kompass, E.J. . . . . Apr. 51
Incremental Actuation '78: Stepper Torque and Force Moving Up. Bailey, S.J. . . . . May 47
Micro I/O: I/O Interfaces—A Microcomputer's Link to the Real World. McGowan, M.J. . . . . June 56
Minicomputer/PC Combination Enhances Control and Reporting Capabilities. Eymard, T.A. and Vlier, T.E. . . . . Apr 122
Single-Chip Interfaces Sensors and Micros (N) . . . . . May 20

LEVEL

Level Instrumentation from Soup to Nuts: Figuratively and Literally. Morris, H.M. . . . . Mar. 56
Sensing Interface Levels Poses Many Challenges. Morris, H.M. . . . . Aug. 40

MACHINE CONTROL

The Automated Factory - A Dream Come True? Ruzic, N. . . . . Apr. 58
Combination of Numerical Control and X-Y Positioning Table Boosts Production . . . . . Sep. 37
Compressed Gas Offers Stand-by One-Shot Actuation . . . . . Apr. 30
Computer-Controlled Machine Automatically Wraps Generator Coils . . . . . May 38
Computer Control at Work: Microcomputer System Controls Steel Angle Fabrication. Horbal, M.T. and Derrico, D. . . . . June 69
Digital Power Drive Controller Dynamics Are Characterized by ROMs. Doherty, D.W. and Wells, E.J. . . . . Jan. 58
Digital Readout Improves Accuracy of Standard Milling Machines . . . . . May 35
Load-Sharing Redundancy Improves System Reliability . . . . . Apr. 27
Machine Tool 78: Biggest Ever, Controls Galore (N) . . . . . Oct. 9
Special CPU Design Makes Programming Logic More Efficient. Bullock, T.B. . . . . May 52

MAN MACHINE INTERFACING

Man-Process Interface is a Vital Display Function. Bailey, S.J. . . . . Mar. 46

MARKETING

A Promising Year for Controls (ED) . . . . . Jan. 47
Analog Input and Output Modules for CAMAC (N) . . . . . May 22
Beckman Forms New Electro-Products Div. (N) . . . . . Sep. 20
Belden Forms Fiber Optics Group (N) . . . . June 16
Brown Boveri Acquires LFE Division (N) . . . Sep. 17
CDC to Manufacture Series/1 Peripherals (N) . . . . . Feb. 22
Computer Automation to Open Irish Plant (N) . . . . . April 16
Computerized Process Control Grows: Report (N) . . . . . June 20
Control: The Common Purpose (ED) . . . . . Feb. 47
Corning's Conventional Fiber Optics Line Sold to Welch Allyn (N) . . . . . July 9
Data Acquisition Study Has New Third Volume (N) . . . . . Aug. 9
DEC to Market Ruggedized PDP-11/34 and LSI-11M (N) . . . . . Aug. 9
DEC's New Mainframe (N) . . . . . Apr. 13
Digitally-Based Telecommunications Growth Forecast (N) . . . . . June 24
Distributed Control System is New From Robertshaw (N) . . . . . Jan. 22
Foxboro Forms Analytical Division (N) . . . . Feb. 17
Giddings & Lewis is New PC Market Entry (N) . . . . . Jan. 21
Gould Completes Biomation Merger (N) . . . Mar. 21
Honeywell Consolidates Level 64 Computer Line (N) . . . . . Mar. 15
IBM Adds Series/1 Power Management Programs (N) . . . . . May 18
L&N to Open Dublin Plant (N) . . . . . Mar. 22
LEDs to Lose to LCDs: Report (N) . . . . . Oct. 14
LFE Enters to Pressure Measurement and Control Marketplace (N) . . . . . July 9
Optoelectronics Market to Double by '85: Report (N) . . . . . Nov. 13
Price Keeping Bubble Memories from Bursting into Market (N) . . . . . Jan. 24

Process Control Division Formed by Muirhead, Inc. (N) . . . July 9
Programmable Controller Technology Thrives in Japan. Furuta, K. and Sato, Y. . . . Sep. 74
P-to-V Transducer Available in Control Market After Automotive Baptism. Bicking, R. . . . Nov. 51
RCA to Design SOS 8085 and 8048 MPUs (N) . . . May 18
Rockwell Reorganizes for Bubble Memory Push (N) . . . Nov. 2
Rockwell to Manufacture ¼ Million-Bit Bubbles (N) . . . Oct. 11
Second Source for 8021 (N) . . . May 20
'78 Outlook Good for Fluid Power Industry: NFPA Survey Results (N) . . . May 17
Siemens, Corning Form New Optical Company (N) . . . Jan. 21
Siemens, AMD Company Operating in Munich (N) . . . June 20
Three-Level Machine Control to Speed Aircraft Parts Production . . . June 40
Tyco Sells Interest in Cutler-Hammer to Eaton (N) . . . July 9
U.S. and Japanese Valve Makers Meet (N) . . . Feb. 24
World Process Control Market to Be $9.5 Billion by '86: Report . . . Aug. 9

MEASURING

Contactless Capactive System Feeds Back Position . . . Mar. 38
Digital Readout Improves Accuracy of Standard Milling Machines . . . May 35
Eliminating Signal Leakage through Shield Saves Using an Amplifier . . . Sep. 48
Energy, Ecology Crises Spur On-Line Analysis. Bailey, S.J. . . . Aug. 27
Flowmeter Rotor "Hovers" in the Liquid Flow Under Measurement . . . Jan. 40
Flowmeters '77: Technical Glamor vs. Good 'Old Ways. Bailey, S.J. . . . Jan. 49
Level Instrumentation from Soup to Nuts: Figuratively and Literally. Morris, H.M. . . . Mar. 56
Linearizing D.P. Flow Loops in the Field . . . Sep. 45
Measuring Force Difficult in Varying Environments. Morris, H.M. . . . Sep. 78
Microprocessors Continue to Add Versatility for New Test Instrumentation. Klein, A. . . . July 41
Microcomputer Improves Resolution in Mass-Sensitive Scale. Bailey, S.J. . . . Nov. 45
Moisture Sensing '78: Prognosis: Precision. Bailey, S.J. . . . Feb. 56
On-Line Sensor Cleaning Keeps the Process Flowing. Yamashita, S. . . . Mar. 66
P-to-V Transducer Available in Control Market After Automotive Baptism. Bicking, R. . . . Nov. 51
Pressure Measurement: A Wide View of a Wider Subject. Morris, H.M. . . . May 57
Rotary Tachometers Dominate the Velocity Sensing Market. Morris, H.M. . . . Dec. 37
Selecting and Applying Nuclear Belt Scales. McIntyre, C.E. . . . July 26
Sensing Interface Levels Poses Many Challenges. Morris, H.M. . . . Aug. 40
Ultrosonic Sensors Solve Slurry Control Problems . . . Mar. 35

MEETINGS, NEW REPORTS

Electro/78 Professional Sessions Were Valuable (N) . . . June 15
First U.S. Fiber Optics Exposition Held (N) . . . Oct. 12
450 Attend Programmable Controller Conference in Houston (N) . . . May 17
IFAC Draws 900 to Helsinki Congress (N) . . . Sep. 19
ISA/78, Active and Polarized, Brings More Than 15,000 to Philadelphia (N) . . . Nov. 9
ISA/78 Technical Sessions Live Up to Conference Theme. Klein, A. . . . Sep. 59
JACC/78 Papers Range From Theory to Application. Klein, A. . . . Sep. 65
Machine Tool 78: Biggest Ever, Controls Galore (N) . . . Oct. 9
Microprocessors Star at 1978 Design Engineering Show and Conference (N) . . . June 20
More Than 200 Attend Incremental Motion Control Symposium (N) . . . July 10
NFPA Hosts International Fluid Power Meeting (N) . . . Mar. 15
New Drives Highlight Triple Engineering Show (N) . . . Dec. 11
100,000 Attend First Chemical Plant Equipment Exposition (N) . . . July 9
Set Fifth Advanced Control Conference April 9-11, 1079 (N) . . . Nov. 9

MEMORIES

Air Force Testing Two Million Bit Bubble System (N) . . . Apr. 15
Price Keeping Bubble Memories from Bursting into Market . . . Jan. 24
Rockwell Reorganizes for Bubble Memory Push (N) . . . Nov. 12
Rockwell to Manufacture ¼ Million Bit Bubbles (N) . . . Oct. 11
0.4 Micron Magnetic Bubbles Formed (N) . . . June 24

MICROPROCESSORS AND MICROCOMPUTERS

Automatically Restarting a Microprocessor After Power Failure. Beaston, J. . . . Dec. 84
CE Integrated Computer Systems Extend Microcomputer Training (N) . . . May 17
Computers and Other Controllers (ED) . . . May 45
Computers, Computers, Everywhere (ED) . . . June 47
Corp Cuts Costs at Micro-Controlled Hydro Plant . . . Feb. 41
Data General Adds MicroNOVA Interfaces, Software (N) . . . Jan. 24
DEC Introduces Smaller Microcomputer Modules (N) . . . Jan. 21
DEC to Market Ruggedized PDP-11/34 and LSI-11M (N) . . . Aug. 9
Education: Microcomputers: the Ubiquitous Control Element. Garen, E.R. . . . June 53
How Much Software for Microcomputer Control? Rolander, T. . . . Jan. 54
Innovative Designs Brighten Temperature Control Outlook. Bailey, S.J. . . . June 73
Microcomputer Control System Boosts Efficiency at Air Freight Terminal. Zilko, P.S. . . . Nov. 111
Microcomputer Improves Resolution in Mass-Sensitive Scale. Bailey, S.J. . . . Nov. 45
Micro I/O: I/O Interfaces - A Microcomputers Link to the Real World. McGowan, M.J. . . . June 56
Microprocessor Aids Air Quality Control System Simulation. Esakov, D.A. and Enright, T.P. . . . June 131
Microprocessors Continue to Add Versatility to New Test Instrumentation. Klein, A. . . . July 41
Microprocessors Improve Serial Communications. DeShon, W.E. . . . Mar. 127
Microprocessors Star at 1978 Design Engineering Show and Conference (N) . . . June 20
New Programmable Controller Has Dual Microprocessors. Kompass, E.J. . . . Oct. 55
New Swedish Controller Handles up to 24 Loops (N) . . . Feb. 22
New Unit Simulates 1-Bit MPU Operation (N) . . . Feb. 17
Perspective: Fitting Computers to the Control Task. Kompass, E.J. . . . June 50
RCA to Design SOS 8085 and 8048 MPUs (N) . . . May 18
Remote Microprocessors Monitor Air Quality Unattended . . . Aug. 19
Second Source for 8021 (N) . . . May 20
Siemens, AMD Company Operating in Munich (N) . . . June 20
Single-Chip Interfaces Sensors and Micros (N) . . . May 20
Smart Sensors: A Microcomputer and A/D Converter on a Single Chip. McGowan, M.J. . . . June 66

MOISTURE MEASUREMENT

Moisture Sensing '78; Prognosis: Precision. Bailey, S.J. . . . Feb. 56

MONITORING AND ANNUNCIATING

Design Alarm System to Favor Critical Information. Hanes, R.L. . . . Oct. 49
Remote Microprocessors Monitor Air Quality Unattended . . . Aug. 19

MOTOR DRIVE SYSTEMS

Digital Power Drive Controller Dynamics Are Characterized by ROMs. Doherty, D.W. and Wells, E.J. . . . Jan. 58
Machine Tool 78: Biggest Ever, Controls Galore (N) . . . Oct. 9
New Drives Highlight Triple Engineering Show (N) . . . Dec. 11
Modular Approach Speeds DC Drive System Build-Up. Baumgart, G.E. and Jones, D.W. . . . Jan. 62
Rotary Tachometers Dominate the Velocity Sensing Market. Morris, H.M. . . . Dec. 37

MULTIPLEXING

Computers and Multiplexing System Project New Plutonium Processing Facility. Reitzel, D. . . . Aug. 75

PAPER AND PULP CONTROLS

Control in the Paper Industry Up to the Minute. Kompass, E.J. . . . Dec. 44

PROCESS CONTROL

Anti-surge Valve Selection Must Include Noise and Compressibility Considerations. Unter, M. . . . Sept. 162
The Automated Factory - A Dream Come True? Ruzic, N. . . . Apr. 58
Brown Boveri Acquires LFE Division (N) . . . Sep. 17
Computerizer Process Control Grows: Report (N) . . . June 20
Control in the Paper Industry Up to the Minute. Kompass, E.J. . . . Dec. 44
Controlling Steam Demand with a Programmable Controller. Theobald, R.J. . . . June 132
Data Acquisition Study Has New Third Volume (N) . . . Aug. 9
Design Alarm Systems to Favor Critical Information. Hanes, R.L. . . . Oct. 49
Distribute or No? The Choice Between Distributed and Central Computing Control. Jenkins, D.W. . . . June 61
Distributed Control System is New From Robertshaw (N) . . . Jan. 22
Distributed Power Sources: Key to Successful Distributed Control. Bailey, S.J. . . . July 31
Energy, Ecology Crises Spur On-Line Analysis. Bailey, S.J. . . . Aug. 27
Environmentally Rugged I/O System Provides New Capabilities for Distributed Control. Kompass, E.J. . . . Apr. 51
Experiment Intended to Recover Oil from Tar Sand Used HP 2100 . . . Sep. 40
Fiber Optic Data Links Near for Industrial Control. Bailey, S.J. . . . Dec. 32
Fisher Unveils Process Control Software Family (N) . . . Feb. 18
Flowmeters '77 Technical Glamor vs. Good Old ways. Bailey, S.J. . . . Jan. 49
Foxboro Forms Analytical Division (N) . . . Feb. 17
How to Approach the Stability Analysis and Compensation of Control Systems. Shinner, S.M. . . . May 62
Innovative Designs Brighten Temperature Control Outlook. Bailey, S.J. . . . June 73
ISA/78, Active and Polarized, Brings More than 15,000 to Philadephia (N) . . . Nov. 9
LFE Enters the Pressure Measurement and Control Marketplace (N) . . . July 9
Level Instrumentation from Soup to Nuts: Figuratively and Literally. Morris, H.M. . . . Mar. 56
Linearizing DP Flow Loops in the Field . . . Sep. 45
Man-Process Interface is a Vital Display Function. Bailey, S.J. . . . Mar. 46
Microprocessor Aids Air Quality Control System Simulation. Esakov, D.A. and Enright, T.P. . . . June 131
Mix of Event- and Time Based Logic Needed for Batch Process Control. Anderson, R.S. . . . July 71
Moisture Sensing '78; Prognosis: Precision. Bailey, S.J. . . . Feb. 56
New Swedish Controller Handles up to 24 loops (N) . . . Feb. 22
PC as Supervisor Runs Part of Cement Making Plant. Freeman, M.L. . . . May 105
PCs Prove Reliable in Chemicals and Plastics. Klostermeyer, W.H. and Thurston, C.W. . . . Apr. 39
Perspective: Fitting Computers to the Control Task. Kompass, E.J. . . . June 50
Pneumatic Process Controls: An Eternal Case of Borrowed Time. Bailey, S.J. . . . Oct. 39

Pressure Measurement: A Wide View of a Wider Subject. Morris, H.M. . . . . May 57
Process Computer Use in Water and Waste to be Polled by ISA (N). . . . . Dec. 12
Process Control Course (N) . . . . . Nov. 13
Process Control System is Distributed to the Valves. McGowan, M.J. . . . . Dec. 41
Process Control Division Formed by Muirhead, Inc. (N) . . . . . July 9
Process Valves '78: Real Effects on the Loop Getting Attention. Bailey, S.J. . . . . Apr. 45
Put some Statistical Muscle in Your Process Control. McElroy, L.N. . . . . May 107
Relays: The Essential Component in Industrial Control. Kompass, E.J. . . . . Feb. 49
Selecting and Appliying Nuclear Belt Scales. McIntyre, C.E. . . . . July 26
Sensing Interface Levels Poses Many Challenges. Morris, H.M. . . . . Aug. 40
Simulation of Control for a Drinking Water Plant. Klinck, M. . . . . Jan. 111
Soaking Pit Controller May Yield Major Energy Savings in Steel Mill. Bendie, L.I. and Soderman, R.H. . . . . Oct. 103
Synergistic Coating Aid Control Valve Action . . . . . Oct. 31
World Process Control Market to Be $9.5 Billion by '86: Report (N) . . . . . Aug. 9

PRESSURE

LFE Enters the Pressure Measurement and Control Marketplace (N). . . . . July 9
Linearizing DP Flow Loops in the Field . . . . Sep. 45
Pressure Measurement: A Wide View of a Wider Subject. Morris, H.M. . . . . May 57
P-to-V Transducer Available in Control Market After Automotive Baptism. Bicking, R. . . . . Nov. 51

PROCESS CONTROL SYSTEMS

Distribute of No? The Choices Between Distributed and Central Computing Control. Jenkins, D.W. . . . . June 61
Distributed Control System is New From Robertshaw . . . . . Jan. 22
Fisher Unveils Process Control Software Family (N) . . . . . Feb. 18
How to Approach the Stability Analysis and Compensation of Control Systems Shinner, S.M. . . . . May 62
Interactive Graphics: A Powerful Tool Supplants Large Control Panels. Brewer, S.C. . . . . Sep. 54
Simulation of Control for a Drinking Water Plant. Klinck, M. . . . . Jan. 111

PROCESS CONTROL VALVES, see Valves

PNEUMATICS

Compressed Gas Offers Stand-by One-Shot Actuation . . . . . Apr. 30
Pneumatic Process Controls: An Eternal Case of Borrowed Time. Bailey, S.J. . . . . Oct. 39

POSITION

Bellows Solve Difficult Problems in Control Systems. Morris, H.M. . . . . Oct. 52
Combination of Numerical Control and X-Y Positioning Table Boosts Production . . . . . Sep. 37
Contractless Capacitive System Feeds Back Position . . . . . Mar. 38
Digital Readout Improves Accuracy of Standard Milling Machines . . . . . May 35
Learn the Jargon Before Specifying Photoelectric Switches. Morris, H.M. . . . . Nov. 47

POWER CONTROLLERS

AC Motor Enrich Control Design Tradeoffs. Bailey, S.J. . . . . Nov. 34
Digital Power Drive Controller Dynamics Are Characterized by ROMs. Doherty, D.W. and Wells, E.J. . . . . Jan. 58
Incremental Actuation '78: Stepper Torque and Force Moving Up. Bailey, S.J. . . . . May 47
PCs Provide Sequencing Flexibility in Furnace Applications. Klein, A . . . . . Feb. 53
Relays: The Essential Component in Industrial Control. Kompass, E.J. . . . . Feb. 49
Simplified Model Eases Hydraulic System Simulation. Kandleman, A. and Nelson, D.J. . . . Apr. 65

POWER SUPPLIES

Distributed Power Sources: Key to Successful Distributed Control. Bailey, S.J. . . . . July 31
Power Supplies Spreading Thinner (ED) . . . July 25

PROCESS CONTROLLERS

How to Approach the Stability Analysis and Compensation of Control Systems. Shinner, S.M. . . . . May 62
Integral-Tracking Override is Better than Output-Tracking. Giles, R.F. and Gaines, L.D. . . . Feb. 63
New Swedish Controller Handles up to 24 Loops (N) . . . . . Feb. 22
Feedforward Can Reduce Servo Settling Time, Palmer R. . . . . Mar. 53
Pneumatic Process Controls: An Eternal Case of Borrowed Time, Bailey, S.J. . . . . Oct. 39
Writing P-I-D Control Loops Easily in BASIC Fishbeck, J . . . . . Oct. 45
Computer Control at Work: Microcomputer System Controls Steel Angle Fabrication. Horbal, M.T. and Derrico, D. . . . . June 69

PROGRAMMABLE CONTROLLERS

Controlling Steam Demand with a Programmable Controller. Theobald, R.J. . . . . June 132
450 Attend Programmable Controller Conference in Houston (N) . . . . . May 17
Giddings & Lewis is New PC Market Entry (N) . . . . . Jan. 21
A look at the New Breed of PCs. Klein, A. Nov. 40
Minicomputer/PC Combination Enhances Control and Reporting Capabilities. Eymard, T.A. and Vlier, T.E. . . . . Apr. 22
Mix of Event- and Time-Based Logic Needed for Batch Process Control. Anderson, R. . . . . July 71
Multiple PCs Operate Under Micro or Mini Control . . . . . Feb. 42
New Programmable Controller Has Dual Microprocessors. Kompass, E.J. . . . . Oct. 55
New Unit Simulates 1-Bit MPU Operation (N) . . . . . Feb. 17
NFPA Hosts International Fluid Power Meeting (N) . . . . . Mar. 15
PC as Supervisor Runs Part of Cement Making Plant. Freeman, M.L. . . . . May 105
PC Controls Refrigerate Foam Filling Line . . . . . June 36
PCs Prove Reliable in Chemicals and Plastics. Klostermeyer, W.H. and Thurston, C.W. . Apr. 39
PCs Provide Sequencing Flexibility in Furnace Applications. Klein, A. . . . . Feb. 53
Programmable Controller Technology Thrives in Japan. Furuta, K. and Sato, Y. . . . . Sep. 74
"Smallest" PC Does Computer-Like Jumps. Klein, A. . . . . Mar. 71
Special CPU design Makes Programming Logic More Efficient. Bullock, T.B. . . . . May 52

PROGRAMMING, see also Computer Software

Interactive Compiler Translates Step-by-step and Stores Translations. Benton, L.A. . . . . Aug 32
Writing P-I-D Control Loops Easily in BASIC. Fishbeck, J. . . . . Oct. 45

RECORDERS AND PLOTTERS

How Accurate is High-Density Digital Recording? Schulze, G.H. . . . . Nov. 52

RELAYS AND SWITCHES

Learn the Jargon Before Specifying Photoelectric Switches. Morris, H.M. . . . . Nov. 47
Load-Sharing Redundancy Improves System Reliability . . . . . Apr. 27
New Standard Issued for Switch Testing Methods (N). . . . . May 20
Relays: The Essential Component in Industrial Control. Kompass, E.J. . . . . Feb. 49
When to Specify Sensitive-Response Low Power Relays. Jones, C. . . . . Sep. 157

SENSORS

Bellows Solve Difficult Problems in Control Systems. Morris, H.M. . . . . Oct. 52
Contactless Capacitive System Feeds Back Position . . . . . Mar. 38
Learn the Jargon Before Specifying Photoelectric Switches. Morris, H.M. . . . . Nov. 47
Level Instrumentation From Soup to Nuts: Figuratively and Literally. Morris, H.M. . . . . Mar. 56
Optoelectronics Market to Double by '85: Report (N) . . . . . Nov. 13
P-to-V Transducer Available in Control Market After Automotive Baptism. Bicking, R. . . . . Nov. 51
Rotary Tachometers Dominate the Velocity Sensing Market. Morris, H.M. . . . . Dec. 37
Sensing Interface Levels Poses Many Challenges. Morris, H.M. . . . . Aug. 40
Smart Sensors: A Microcomputer and A/Converter on a Single Chip. McGowan, M.J. . . . . June 66
Ultrasonic Sensors Solve Slurry Control Problems . . . . . Mar. 35

SERVOS

Digital Power Drive Controller Dynamics Are Characterized by ROMs. Doherty, D.W. and Wells, E.J. . . . . Jan. 58
Nonlinear Feedforward Can Reduce Servo Settling Time. Palmer, R. . . . . Mar. 53
Rotary Tachometers Dominate The Velocity Sensing Market. Morris, H.M. . . . . Dec. 37

SIGNAL TRANSMISSION, see Control signal transmission

SIMULATION AND MODELING

Microprocessors Aids Air Quality Control System Simulation. Esakov, D.A. and Enright, T.P. . . . . June 131
Simplified Model Eases Hydraulic System Simulation. Kandelman, A amd Nelson, D.J. . . . Apr. 65
Simulation of Control for A Drinking Water Plant. Klinck, M. . . . . Jan. 111

SOFTWARE, see Computer Software

SPEED CONTROL

New Drives Highlight Triple Engineering Show (N) . . . . . Dec. 11
Rotary Tachometers Dominate the Velocity Sensing Market. Morris, H.M. . . . . Dec. 37

STANDARDS

New Standard Issued for Switch Testing Methods (N). . . . . May 20
What's New in Control Standards. Mason, H.L. . . . . Sep. 83

STEPPER MOTORS, see Actuators

SWITCHES, see Relays and switches

SYSTEMS: Analysis

How to Approach the Stability Analysis and Compensation of Control Systems. Shinner, S.M. . . . . May 62
Nonlinear Feedforward Can Reduce Servo Settling Time. Palmer, R. . . . . Mar. 53

SYSTEMS: Design

Automatically Restarting a Microprocessor After Power Failure. Beaston, J. . . . . Dec. 84
Integral-Tracking Override is Better than Output-Tracking. Giles, R.F. and Gaines, L.D. . . . Feb. 63
On-Line Sensor Cleaning Keeps the Process Flowing. Yamashita, S. . . . . Mar. 66
Put Some Statistical Muscle in Your Process Control. McElroy, L.N. . . . . May 107

TAPE RECORDERS: see Recorders and Plotters

TEMPERATURE

Innovative Designs Brighten Temperature Control Outlook. Bailey, S.J. . . . . June 73

TEST EQUIPMENT

Microprocessors Continue to Add Versatility to New Test Instrumentation. Klein, A. . . . . July 41

TIMING AND TIMERS

Mix of Event- and Time-Based Logic Needed for Batch Process Control. Anderson, R.S. . . July 71

TRANSDUCERS, see Sensors

VALVES

Anti-Surge Valve Selection Must Include Noise and Compressibility Considerations. Unter, M. . . . . Sep. 162
Process Control System is Distributed to the Valves. McGowan, M.J. . . . . Dec. 41
Process Valves '78: Real Effects on the Loop Getting Attention. Bailey, S.J. . . . . Apr. 45
Synergistic Coating Aid Control Valve Action . . . . . Oct. 31
U.S. and Japanese Valve Makers Meet (N) . . . . . Feb. 24

WEIGHING AND BATCHING

Measuring Force Difficult in Varying Environments. Morris, H.M. . . . . Sept. 78
Microcomputer Improves Resolution in Mass-Sensitive Scale. Bailey, S.J. . . . . Nov. 45
Mix of Event- and Time-Based Logic Needed for Batch Process Control. Anderson, R. . . . July 71
Selecting and Applying Nuclear Belt Scales. McIntyre, C.E. . . . . July 26
Transducer Takes Over Melon Sizing Job . . Jan 37